

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

THIS PAGE BLANK (USPTO)

UK Patent Application

(19) GB (11) 2 221 140 (13) A

(43) Date of A publication 31.01.1990

(21) Application No 8917250.6

(22) Date of filing 28.07.1989

(30) Priority data

(31) 8818052

(32) 28.07.1988

(33) GB

(51) INT CL⁴
A43B 5/12

(52) UK CL (Edition J)
A3B B8A1 B8H

(56) Documents cited

GB 1325616 A
EP 0232065 A

GB 1299448 A
US 4598918 A

GB 1297038 A

(71) Applicant

Lucas Mellinger
4 Kew Green, Richmond, Surrey, TW9 3BH,
United Kingdom

(58) Field of search
UK CL (Edition J) A3B, A6D
INT CL⁴ A43B

(72) Inventor

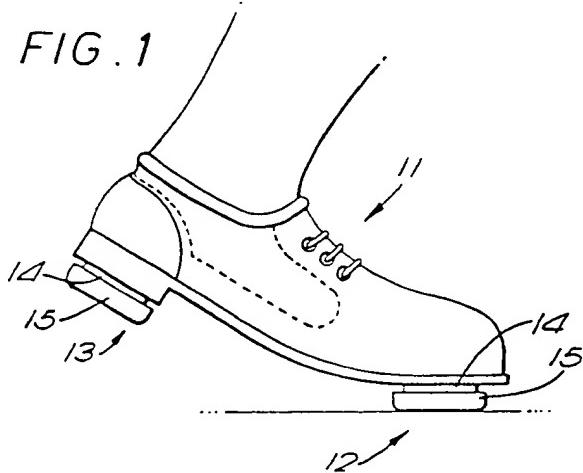
Lucas Mellinger

(74) Agent and/or Address for Service

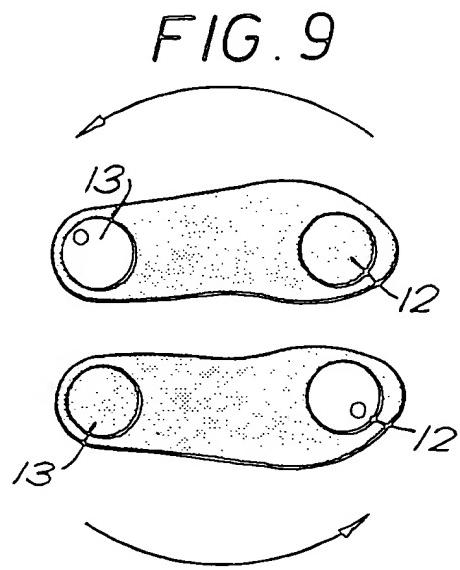
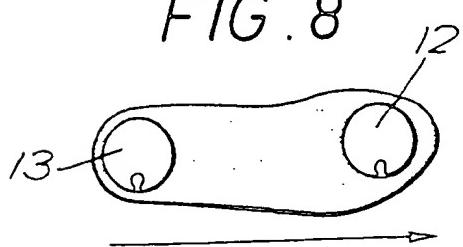
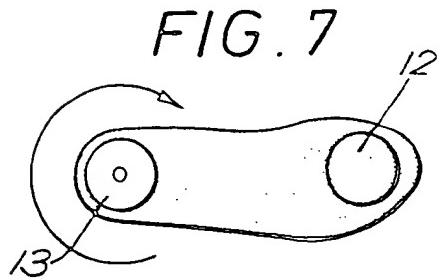
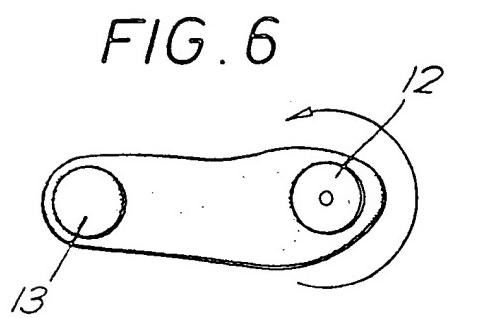
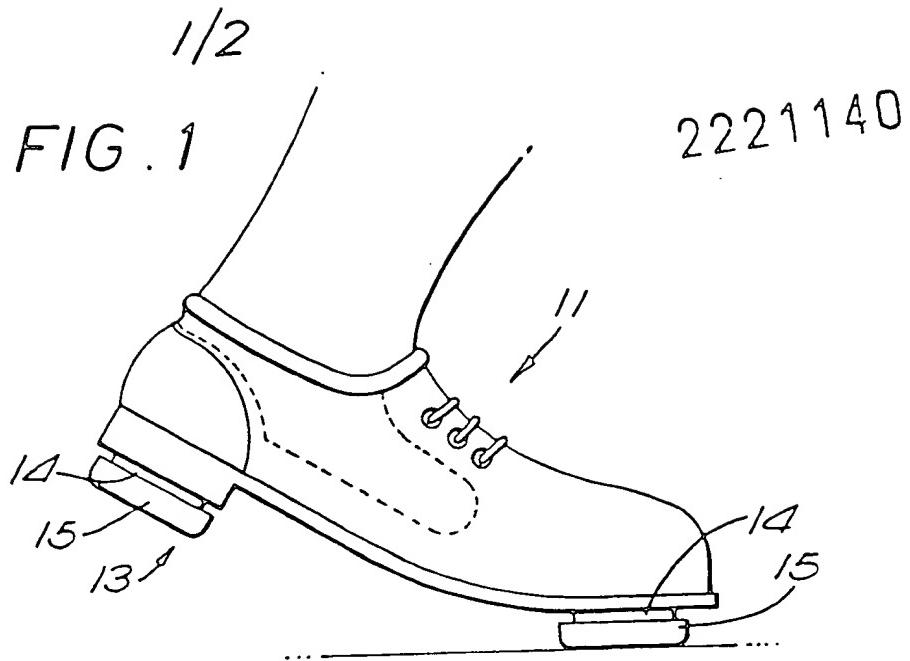
Kilburn and Strode
30 John Street, London, WC1N 2DD, United Kingdom

(54) Dancing shoes

(57) A dancing shoe (11) has a front pivot (12) beneath the toe region and a rear pivot (13) beneath the heel region of the foot. Each pivot (12, 13) comprises an upper part (14) fixed relative to the sole of the shoe and a base (15) which is rotatably attached to the upper part (14). The shoe enables a dancer to pivot on toe or heel or to move in a straight line.

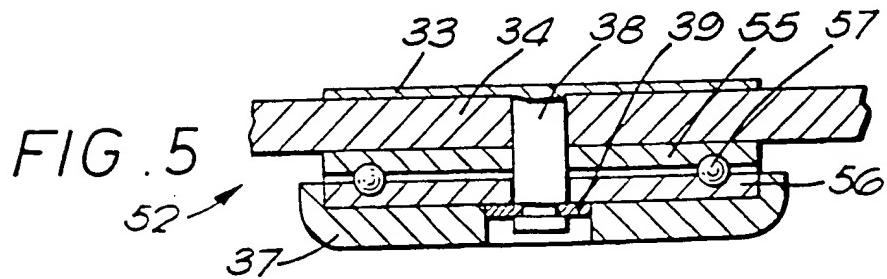
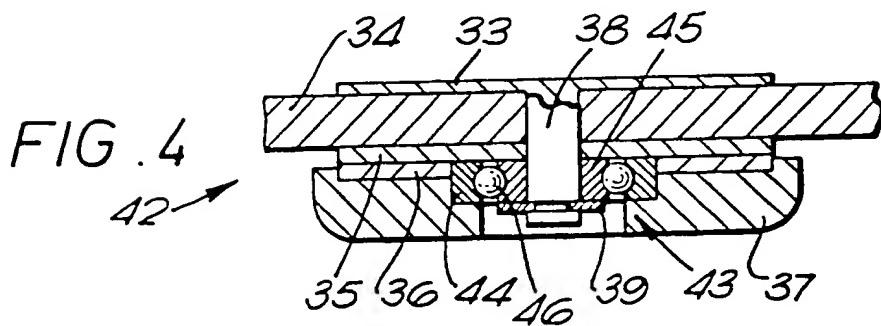
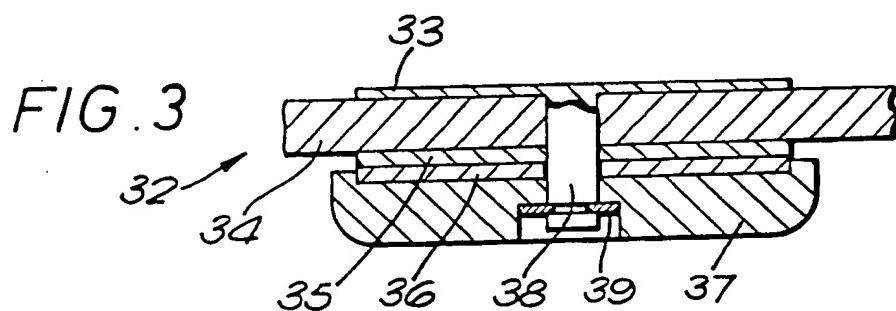
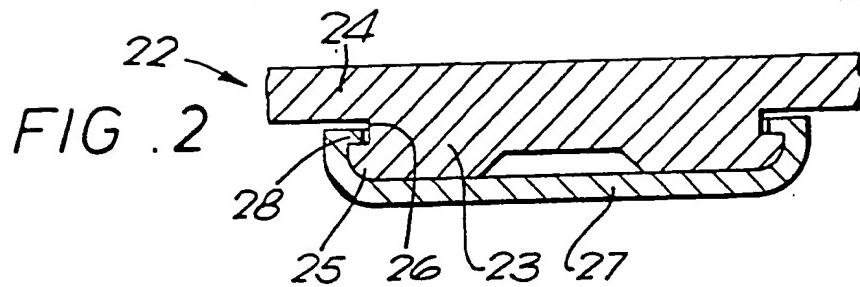


GB 2 221 140



2/2

2221140



2221140

DANCING SHOES

The present invention relates to dancing shoes. One of the skills required from a dancer is to control body and limbs in flowing movements which overcome also the impediment of friction at the interface between the feet and the ground.

Thus, rustic or country dancing, for instance, performed barefoot in a field, does not permit the glide demanded by a waltz which needs smoothly soled shoes and a polished dance floor. However, even with sophisticated surfaces, the rotation of a dancer supported on his foot or feet remains comparatively restricted. For this reason, to distribute the impediment, a rotation is generally executed in a number of space-consuming steps or, where on modern dance floors, space was confined, 'crush' or 'rhythm' dancing - albeit with impoverished vitality - became the vogue.

In ice-dancing, where resistance between skate and ice is minimised, new figures, such as the spin, are made possible. Skates however prevent the flexure of the foot and their use is restricted to skating rinks.

It is an object of the present invention to provide a dancing shoe which allows the dancer to rotate freely on any normal dance floor without in any way limiting customary movements or departing from the customary appearance of modern dancers.

According to the invention, a dancing shoe includes two rotatable pivots, one at the toe and one at the heel.

Thus the present invention may facilitate rotation about either of two pivots, one at the toe and one at the heel of each shoe, allowing for a variety of move-

ments to be performed, not only by using the pivots as such, in isolation, but also in developing linear gliding motion when the dancer's weight is distributed eccentrically over two pivots.

5 The dancing shoe comprises preferably a flat-heeled and laced shoe to which two similar pivots are firmly attached, one under the heel and one under the toes. The upper part of the pivot which is preferably fixed to the shoe may be housed within a dished base.
10 The dished base will then be the only component in contact with the dance floor. The interface between the upper part and the lower dished base is designed to permit rotation, for instance by means of self-aligning bearings or by self-lubricating plastic surfaces. The
15 lower face of the dished base is equivalent to that of normal dance shoes in their interface with the dance floor.

20 The weight and the dimension of the pivots between the sole of the shoe and the floor is kept to a minimum, preferably not exceeding 12 mm, so that the dancer, though marginally taller, feels and appears traditionally dressed. The dancer equipped with these
25 shoes will therefore be able to walk and dance, if required, in a conventional manner, provided he maintains his balance by transmitting his body weight only through the centre points of the pivots.

30 New movements are made possible: rotation, either on heel or toe, and longitudinal movement in a straight line or a curve by placing the body-weight over selected edges of each shoe. The shoes should therefore appeal to the amateur as well as to those, all over the world, who dedicated to excel, will be able to develop an exciting new dance form.

35 The shoes may further be embellished with attachments which, by rotation, generate sound effects or

sparks issuing from under the soles.

The invention may be carried into practice in various ways and some embodiments will now be described by way of example with reference to the 5 accompanying drawings, in which:-

Figure 1 is a schematic sketch of a shoe in accordance with the invention;

Figures 2 to 5 are vertical sections through four different forms of assembly for the pivots; and

10 Figures 6 to 9 show various possible movements diagrammatically.

As shown in Figure 1 the shoe 11 is a lace-up shoe having a front pivot 12 beneath the toe region and a rear pivot 13 beneath the heel region of the foot. 15 Each pivot 12, 13 comprises an upper part 14 fixedly attached to the under surface of the shoe 11 and a lower dished base 15 which is rotatably attached to the upper part 14. The under surface of the dished base 15 is preferably not smooth though it may be.

20 Figure 2 shows one embodiment of a pivot 22. It includes an upper pivot port 23 which is moulded integrally with the sole 24 of the shoe (though of course the sole 24 and pivot 23 may be formed separately and then connected together) and has a shoulder 25 defining a circular groove 26. The shoulder 25 has a curved outer periphery. A lower pivot part 27, which is generally dish-shaped, fits about the shoulder 25 and has a lip 28 which locates in the groove 26. Both the upper and lower pivot parts 23, 27 are either made from or coated with a low friction material (e.g. polyacetal) to provide a low friction interface between them.

30 Figure 3 shows an alternative embodiment of a pivot 32. In this case, a metal plate 33 is located above the sole 34 and a second plate 35 is attached to 35

the underside of the sole 34. A lower plate 36 located beneath the second plate 35 is attached to the lower pivot part 37 and a spigot 38 extends from the metal plate 33 through the sole 34, the second plate 35, the lower plate 36 and the lower pivot part 37. The assembly is held together by a circlip 39. The second plate 35 and lower plate 36 are either made from or coated with a suitable low friction material to provide a low friction interface.

The embodiment shown in Figure 4 is similar to that shown in Figure 3, other than in one respect and equivalent parts therefore have the same reference numerals as used in Figure 3. The difference in the pivot 42 of Figure 4 is the presence of a ball bearing 43. The outer race 44 is attached to the lower pivot part 37 and second plate 35, and the inner race 45 is attached to spigot 38 above the circlip 39. Balls 46 run between the inner and outer races 44, 45. This tends to reduce the friction at the spigot 38 and circlip 39.

The pivot 52 shown in Figure 5 is also similar to the pivot 32 shown in Figure 3. In this case, however, the second plate 35 and lower plate 36 are replaced by upper and lower ball races 55 and 56 respectively with balls 57 between them.

In all cases, the lower pivot part contacts the floor.

In Figures 6 to 9, various movements are shown. In Figure 6, the weight (indicated by a large dot) is placed on the centre of one of the front pivots 12 to perform a toe-spin. In Figure 7, the weight is placed in the centre of one of the rear pivots 13 to perform a heel-spin. In Figure 8, the weight is placed on the edges of both pivots 12, 13 of one or both shoes 11 to perform a glide. In Figure 9, the weight is placed on

the edge of one front pivot 12 and the edge of one rear pivot 13 to perform a rotation.

CLAIMS:

1. A dancing shoe including two rotatable pivots, one at the toe and one at the heel.

5

2. A shoe as claimed in Claim 1, in which the pivots are similar to each other.

10 3. A shoe as claimed in Claim 1 or Claim 2, in which the pivot includes an upper part fixed to the sole of the shoe and a lower part which is rotatable with respect to the upper part.

15 4. A shoe as claimed in Claim 3, in which the lower part of the pivot comprises a dished base.

20 5. A shoe as claimed in Claim 3 or Claim 4, in which the interface between the upper part and the lower part permits rotation by means of a bearing.

6. A shoe as claimed in Claim 5, in which the bearing comprises a ball bearing.

25 7. A shoe as claimed in Claim 6, in which the ball bearing includes one race attached to the lower pivot part and one race attached to the central spigot forming part of the upper pivot part.

30 8. A shoe as claimed in Claim 6, in which one race of the ball bearing is attached to the lower pivot part and the other race is attached to the sole of the shoe.

35 9. A shoe as claimed in Claim 5, in which the

bearing comprises two self lubricating surfaces in contact with each other.

10. A shoe as claimed in Claim 9, in which the self lubricating surfaces are provided by the lower pivot part and the upper pivot part, the upper pivot part being formed integrally with or being attached to the sole of the shoe.

10 11. A shoe as claimed in Claim 9, in which the self lubricating surfaces are provided by a plate attached to the sole of the shoe and a plate attached to the lower pivot part.

15 12. A dancing shoe constructed and arranged substantially as herein specifically described with reference to and as shown in Figure 1 and any one of Figures 2, 3, 4 or 5 of the accompanying drawings.